



# 2018 Fall Electrofishing (FE) Summary Report

## Little Hills Lake (WBIC 105200)

Waushara County

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### Introduction and Survey Objectives

In 2018, the Department of Natural Resources conducted a one night electrofishing survey of Little Hills Lake in order to provide insight and direction for future fisheries management of this water body. Primary sampling objectives of this survey were to characterize the composition, relative abundance, and size structure for the lake's fish species. The following report is a brief summary of that survey including the general status of the fish populations and future management options for Little Hills Lake. Little Hills Lake also includes a special bass regulation enacted in September 2005 and panfish reduction bag in April 2013..

Acres: 78 Shoreline Miles: 1.8 Maximum Depth (feet): 20  
 Lake Type: Seepage Public Access: One Public Boat Launch  
 Regulations: 10 Panfish may be kept.  
 Largemouth and Smallmouth Bass of any length may be kept, Bag Limit = 5 fish All other species, statewide default

### WISCONSIN DNR CONTACT INFO.

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### Survey Information

Site location	Survey Date	Water Temperature (°F)	Target Species	Total Miles Shocked	Number of Stations	Gear	Number of Netters
Little Hills Lake	10/04/2018	60	All	2.0	1	Boomshocker	2

### Fish Metric Descriptions PSD, CPUE, and LFD

**Proportional Stock Density (PSD)** is an index used to describe size structure of fish populations. It is calculated by dividing the number of quality size fish by the number of stock size fish for a given species. PSD values between 40 - 60 generally describe a balanced fish population.

**Catch per unit effort (CPE)** is an index used to measure fish population relative abundance, which simply refers to the number of fish captured per unit of distance or time. For electrofishing surveys, we typically quantify CPUE by the number and size of fish per hour of electrofishing the shoreline. CPUE indexes are compared to statewide data by percentiles. For example, if a CPUE is in the 90th percentile, it is higher than 90% of the other CPUEs in the state.

**Length frequency distribution (LFD)** is a graphical representation of the number or percentage of fish captured by half inch or one inch size intervals. Smaller fish (or younger age classes) may not always be represented in the length frequency due to different habitat usage or sampling

### Survey Method

- Little Hills Lake was sampled in the fall to provide trend data to evaluate the efficacy of the regulation changes that have occurred over the past 15 years. Fall electrofishing was used to provide consistency in time of sampling, which was the preferred assessment method when the bass regulation was put in place. The primary objective for this sampling period was to count and measure adult bass and panfish. Other gamefish may be sampled but are considered by-catch as part of this survey.
- Almost two miles of shoreline are sampled annually. All fish were dipped and identified to species, and gamefish and panfish were measured for length.
- Fish metrics used to describe fish populations include proportional stock density, catch per unit effort, and length frequency distributions.



### Size Structure Metrics

Species	Total	Average Length (inches)	Length Range (inches)	Stock and Quality Size (inches)	Stock Number	Quality Number	PSD	Percentile Rank	Size Rating
Bluegill	24	5.7	2.7 - 10.4	3.0 and 6.0	22	7	36%	62nd	Moderate
Pumpkinseed	3	4.4	3.7 - 4.7	3.0 and 6.0	-	-	-	-	-
Largemouth Bass	151	8.4	2.7 - 20.5	8.0 and 12.0	81	22	28%	16th	Low
Yellow Perch	4	5.5	3.0 - 7.0	5.0 and 8.0	-	-	-	-	-

### Abundance Metrics

Species	Stock Size CPE (No. per Hour)	Percentile Rank	Overall Abundance Rating	Length Index	Length Index CPUE (No. per hour)	Length Index Percentile Rank	Length Index Abundance Rating
Bluegill	24	17th	Low	≥ 8.0 inches	4.3	74th	Moderate - High
Pumpkinseed	3	15th	Low	≥ 7.0 inches	0	-	-
Largemouth Bass	88	88th	Moderate - High	≥ 14.0 inches	4.3	44th	Moderate
Yellow Perch	3	14th	Low	≥ 8.0 inches	0	-	-



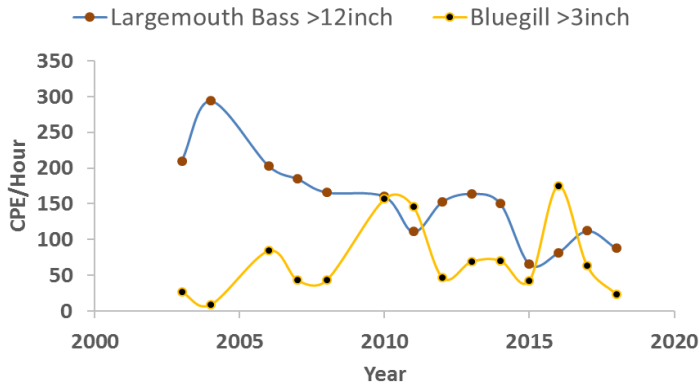
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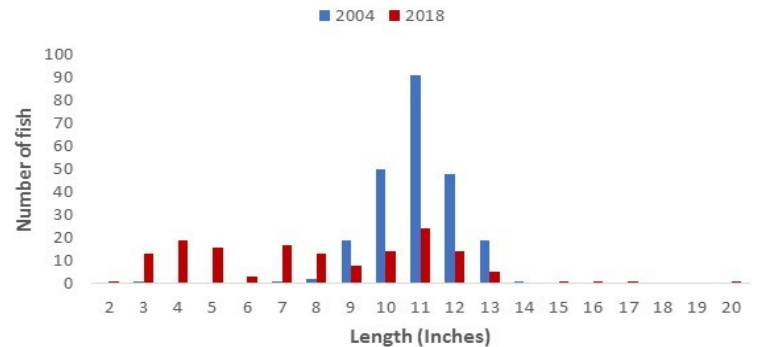
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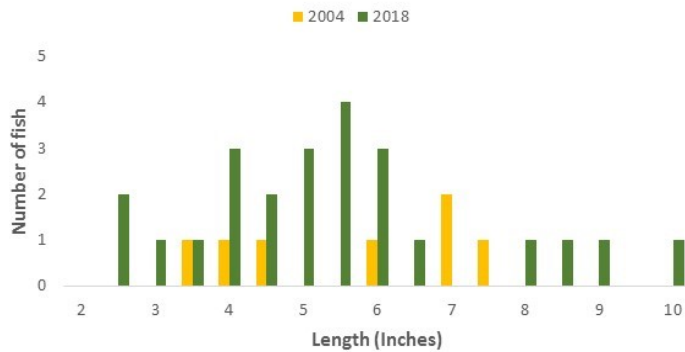
### Fall Electrofishing CPE/Hour - Little Hills Lake



### Little Hills Lake - Largemouth Bass



### Little Hills Lake - Bluegill



### Historical Trends (CPE/No. per Hour)

Year	Largemouth Bass			Bluegill		
	8 Inch/Hr	12 Inch/Hr	14 Inch/Hr	3 Inch/Hr	6 Inch/ Hr	8 Inch/Hr
2003	210	68	6	27	2	0
2004	294	87	1	9	5	0
2005		No Size Limit	For Bass	Regulation		
2006	203	72	1	84	8	0
2007	185	58	1	43	5	0
2008	166	7	1	43	28	8
2010	160	50	3	157	65	8
2011	111	21	2	146	28	10
2012	153	20	2	47	19	3
2013 Reg.	164	33	3	69	27	7
2014	151	20	2	71	50	18
2015	66	32	3	42	14	8
2016	82	26	7	176	41	6
2017	112	10	6	63	21	7
2018	88	25	4	24	9	4

### Summary

- A total of 231 fish in 12 species were collected during our survey. The most frequently encountered and common species were largemouth bass (151), bluegill (24), and black crappie (11). Other species sampled in lower abundance included bluntnose minnow (2), channel catfish (1), common shiner (1), green sunfish (6), northern pike (2), pumpkinseed (3), rock bass (1), yellow bullhead (7), and yellow perch (4).
- Largemouth bass was the dominant gamefish captured in our survey. Size structure was low while abundance levels were moderate to high (88/hr) and favorably less than a 2004 survey (294/hr). The no size limit for bass was put in place in 2005 to promote the harvest of bass.
- The largest largemouth bass sampled was 20.5 inches and only 5% of the catch was greater than 14.0 inches, a slight improvement since 2004 when 0% of largemouth captured were above 14.0 inches.
- Bluegill were found in low density (24/hour > 3 inches), compared to low density in 2004 (9/hour > 3 inches). Highest density was 176/hour > 3 inches in 2016. Bluegills showed low to fair size structure with 36% greater than 6 inches, compared to 57% in 2004. A higher PSD, like in 2004, is typical of a very low population. When the numbers are low there is more food for the mouths that are left.
- The survey in 2004 revealed an overabundant largemouth bass population with suppressed panfish populations. Concerned anglers and residents approached the DNR about balancing the bass/bluegill fishery. The size limit was removed on largemouth bass during the fall of 2005. Within three years there were positive impacts to abundance and size structure of bluegill and bass.
- Two northern pike were sampled in this survey. A spring fyke netting survey during spawning is more appropriate for assessing northern pike populations.
- In the spring of 2013, Little Hills Lake had a special panfish regulation of a 10 bag put in place to further help enhance their numbers (highlighted in pink). The liberal bass regulations put on in 2005 appears to have reduced their numbers down to where we want them.

### Management Options

This survey was primarily intended to assess largemouth bass and panfish populations. Other species are captured but different survey techniques are typically used to better assess their population metrics. Therefore, management recommendations from this survey are focused on bass and panfish.

#### Largemouth Bass

- Management Objective: Increase largemouth CPUE of bass > 14.0 inches to more than 20 per hour, maintain CPUE of bass > 8.0 inches in the 50 - 100 per hour and increase the PSD to around 40-50%.
- Management Action: The bass regulation appears to be slowly accomplishing its goal of reducing bass numbers, increasing size structure and increasing bluegill numbers. Continue to monitor the no size limit for largemouth bass, bag of 5 and re-evaluate on an annual basis.

#### Panfish

- Panfish size structure was found at fair levels, while abundance was low. Bluegill abundance has been up and down since the start of monitoring in 2003. The survey in 2018 showed we are currently in a down cycle.
- Management Objective: Increase bluegill electrofishing PSD (>6.0 inches) at 40% or better and increase relative abundance to 200 - 300 per hour ≥ 3 inches. We hope the 2013 panfish bag limit will help to achieve this goal.

#### Other Management Objectives

Water levels have been around historically low levels throughout the evaluation period and could have had an impact. Higher water elevations in the last couple years have flooded excellent shoreline fish habitat and this is important to the health of a lakes aquatic ecosystem. Property owners are encouraged to maintain/protect and/or enhance this newly flooded habitat.